IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	Atty. Docket: NL 030968
MARK THOMAS JOHNSON ET AL.	Confirmation No. 4579
Serial No. 10/568,644	Examiner: Keith L. CRAWLEY
Filed: FEBRUARY 16, 2006	Group Art Unit: 4193
Title: ELECTROPHORETIC DISPLAY PANEL	

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Appellants herewith respectfully present its Brief on Appeal as follows:

REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA.

RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge and belief, there are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-9, 11, 13-18 and 20-22 are pending in this application. Claims 10, 12 and 19 are canceled. Claims 1-9, 11, 13-18 and 20-22 are rejected in the Final Office Action that issued April 14, 2009. This rejection was upheld in an Advisory Action that mailed on June 25, 2009. Claims 1-9, 11, 13-18 and 20-22 are the subject of this appeal.

STATUS OF AMENDMENTS

An Amendment After Final Action was submitted on June 15, 2009 in response to a Final Office Action mailed on April 14, 2009. The Amendment After Final Action included amendments to the claims. In an Advisory Action mailed on June 25, 2009, it is indicated that the after Amendment After Final Action will be entered but the Amendment After Final action does not place the application in condition for allowance. This Appeal Brief is in response to the Final Office Action mailed on April 14, 2009, that finally rejected claims 1-9, 11, 13-18 and 20-22, which remain finally rejected in the Advisory Action mailed on June 25, 2009.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention, for example as claimed in claim 1, relates to an electrophoretic display panel (e.g., see, present application, FIG. 2), including an electrophoretic medium (e.g., see, present application, page 6, line 24, electrophoretic medium 5) including charged particles (e.g., see, present application, page 6, line 24, charged particles 6); a plurality of picture elements (e.g., see, present application, page 6, lines 21, 26, picture elements 2) having electrodes associated with each picture element for receiving a potential difference (e.g., see, present application, page 6, lines 25-26, electrodes 3, 4); and drive means, the drive means being arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to be driven to a position corresponding to image information from a preceding optical state (e.g., see, present application, FIG. 1 and page 7, lines 9-13, drive means 100), the potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in

sign, each preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions (e.g., see, present application, page 10, line 29 through page 11, line 2), wherein the drive means are further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms for setting a picture element from a preceding optical state to a grey scale in two or more pulses which change the optical state of the system separated by a non-zero time interval and are arranged for prior to application of the grey scale potential difference, driving a reset potential difference of each picture element to drive the particles to occupy an extreme position which is determined based on which extreme position is closest to a position of the particles which corresponds to the image information (e.g., see, present application, FIG. 6A and page 9, lines 11-25).

The present invention, for example as claimed in claim 11, relates to a method for driving an electrophoretic display device (e.g., see, present application, FIG. 2) including an

electrophoretic medium (e.g., see, present application, page 6, line 24, electrophoretic medium 5) including charged particles (e.g., see, present application, page 6, line 24, charged particles 6); a plurality of picture elements (e.g., see, present application, page 6, lines 21, 26, picture elements 2), the method includes acts of applying grey scale potential differences for setting a picture element to an optical state from a preceding optical state for at least a subset of all drive waveforms in two or more pulses separated by a non-zero time interval (e.g., see, present application, FIG. 1 and page 7, lines 9-13, drive means 100), the grey scale potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each grey scale preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions (e.g., see, present application, page 10, line 29 through page 11, line 2); and prior to application of the grey scale potential difference, applying a reset potential difference of each

picture element to drive the particles to occupy an extreme position which is determined based on which extreme position is closest to a position of the particles which corresponds to the optical state (e.g., see, present application, FIG. 6A and page 9, lines 11-25).

The present invention, for example as claimed in claim 20, relates to a drive means (e.g., see, present application, FIG. 1 and page 7, lines 9-13, drive means 100) for driving an electrophoretic display panel (e.g., see, present application, FIG. 2), said display panel, including an electrophoretic medium (e.g., see, present application, page 6, line 24, electrophoretic medium 5) including charged particles (e.g., see, present application, page 6, line 24, charged particles 6); a plurality of picture elements (e.g., see, present application, page 6, lines 21, 26, picture elements 2) having electrodes associated with each picture element for receiving a potential difference (e.g., see, present application, page 6, lines 25-26, electrodes 3, 4); drive means arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to occupy the position corresponding to the image

information (e.g., see, present application, FIG. 1 and page 7, lines 9-13, drive means 100), the grey scale potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each grey scale preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions (e.g., see, present application, page 10, line 29 through page 11, line 2), said drive means being further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms for setting a picture element from a preceding optical state to a grey scale in two or more pulses which change the optical state of the system separated by a non-zero time interval and are arranged for prior to application of the grey scale potential difference, driving a reset potential difference of each picture element to drive the particles to occupy an extreme position which is determined based on which extreme position is closest to a position of the particles which

corresponds to the grey scale (e.g., see, present application, FIG. 6A and page 9, lines 11-25).

It should be explicitly noted that it is not the Appellants' intention that the currently claimed device and method be limited to operation within the illustrative device and method described above beyond what is required by the claim language. Further description of the illustrative device and method is provided above indicating portions of the claims which cover the illustrative device and method merely for compliance with requirements of this appeal without intending any further interpreted limitations be read into the claims as presented.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-9, 11, 13-18 and 20 of U.S. Patent Application Serial No. 10/568,644 are anticipated under 35 U.S.C. §102(e) over U.S. Patent No. 7,012,600 to Zehner ("Zehner").

Whether claims 21 and 22 of U.S. Patent Application Serial No. 10/568,644 are obvious under 35 U.S.C. §103(a) over Zehner in view of U.S. Patent No. 7,176,880 to Amundson ("Amundson").

ARGUMENT

Claims 1-9, 11, 13-18 and 20 are said to be anticipated by Zehner.

Appellants respectfully request the Board to address the patentability of independent claims 1, 11 and 20, and further claims 2-9 and 13-18 as respectively depending from one of independent claims 1 and 11, based on the requirements of independent claims 1, 11 and 20. This position is provided for the specific and stated purpose of simplifying the current issues on appeal. However, Appellants herein specifically reserve the right to argue and address the patentability of claims 2-9 and 13-18 at a later date should the separately patentable subject matter of claims 2-9 and 13-18 later become an issue. Accordingly, this limitation of the subject matter presented for appeal herein, specifically limited to discussions of the patentability of independent claims 1, 11 and 20 is not intended as a waiver of Appellants' right to argue the patentability of the further claims and claim elements at that later time.

Zehner shows an active matrix display architecture having a single common transparent electrode on one side of the electro-optic layer and a matrix of pixel electrodes arranged in rows and columns having intersections uniquely defining pixel electrodes on the opposed side. Zehner further states that "the electric field experienced by each pixel of the electro-optic layer is controlled by varying the voltage applied to the associated pixel electrode relative to the voltage (normally designated "Vcom") applied to the common front electrode." (See, Zehner, Col. 15, lines 24-40.) Zehner also shows that a reset pulse may be applied to drive the pixels "alternately to their black and white states." (See, Zehner, FIG. 9 and Col. 26, lines 9-14.)

In rejecting claim 10 to which claims 1, 11 and 20 were amended to include the subject matter thereof, the Final Office Action relies on col. 28, lines 17-25 of Zehner, which identifies its final pulse as the addressing pulse and the other pulses as prepulses and that the prepulse slide show waveforms can be divided into those with an odd number of prepulses and those with an even number of prepulses. On col. 28, lines 44-47, Zehner states that "[i]t is also only necessary that pairs of pulses have equal and

opposite impulses it is possible that there may be pairs of widely varying impulses chained together, i.e. +I, -I, +0.1I, -0.1I, +4I, -4I."

The Final Office Action recognizes that Zehner utilizes a (emphasis added) "so-called 'prepulse slide show waveforms', determined by the 'look-up table method'" (see, Final Office Action, page 6).

Yet the look-up table of Zehner is described as (emphasis added) "containing data representing the impulses necessary to convert an initial gray level to a final gray level" (see, Zehner, the Abstract).

In contradistinction, claim 10 recites controlling (emphasis added) "the potential difference to be a sequence of preset potential differences before being the grey scale potential difference, the sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but

insufficient to enable said particles to reach the other one of the extreme positions.

Zehner is clear that the potential differences provided by the look-up table of Zehner contain data representing the impulses necessary to convert an initial gray level to a final gray level.

There is no teaching or description in Zehner of at least the sequences of preset potential differences; the sequence of preset potential differences having preset values and associated preset durations; and the potential difference representing a preset energy insufficient to enable the particles to reach the extreme positions.

It is respectfully submitted that the electrophoretic display panel of claim 1 is not anticipated or made obvious by the teachings of Zehner. For example, Zehner does not disclose or suggest, an electrophoretic display panel that amongst other patentable elements, comprises (illustrative emphasis added) "an electrophoretic medium comprising charged particles; a plurality of picture elements having electrodes associated with each picture element for receiving a potential difference; drive means arranged for controlling the potential difference of each picture element to

be a grey scale potential difference for enabling the particles to occupy the position corresponding to the image information, the grey scale potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each grey scale preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions" as recited in claim 1, and as similarly recited in each of claims 11 and 20. Clearly, Zehner provides a potential difference that represents the impulses necessary to convert an initial gray level to a final gray level.

Based on the foregoing, the Appellants respectfully submit that independent claims 1, 11 and 20 are patentable over Zehner and notice to this effect is earnestly solicited.

Claims 2-9 and 13-18 respectively depend from one of claims 1 and 11 and accordingly are allowable for at least this reason as well as for the separately patentable elements contained in each of

said claims. Accordingly, separate consideration of each of the dependent claims is respectfully requested.

Claims 21 and 22 said to be unpatentable over Zehner in view of Amundson.

Amundson is cited for allegedly showing elements of the dependent claim yet does not cure the deficiencies Zehner. Accordingly, it is respectfully submitted that claims 21 and 22 are allowable at least based on respective dependence from one of independent claims 1 and 20.

In addition, Appellants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Appellants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

CONCLUSION

Claims 1-9, 11, 13-18 and 20-22 are patentable over Zehner alone and in view of Amundson. Thus the Examiner's rejection of claims Amundson should be reversed.

Respectfully submitted,

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APPENDIX A

CLAIMS ON APPEAL

1. (Previously presented) An electrophoretic display panel, comprising:

an electrophoretic medium comprising charged particles;

a plurality of picture elements having electrodes associated with each picture element for receiving a potential difference; and

drive means, the drive means being arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to be driven to a position corresponding to image information from a preceding optical state, the potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions,

wherein the drive means are further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms for setting a picture element from a preceding optical state to a grey scale in two or more pulses which change the optical state of the system separated by a non-zero time interval and are arranged for prior to application of the grey scale potential difference, driving a reset potential difference of each picture element to drive the particles to occupy an extreme position which is determined based on which extreme position is closest to a position of the particles which corresponds to the image information.

2. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for, during the non-zero time interval, applying a voltage value below a threshold voltage value below which the particles remain substantially in their position.

3. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for,

during the non-zero time interval, applying a voltage value of substantially zero.

4. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for controlling the potential difference of each picture element to be a reset potential difference having a reset value and a reset duration for enabling particles to substantially occupy one of the extreme optical positions.

5. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are further arranged for application of the grey scale potential difference over more than two pulses.

6. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are further arranged for application of the grey scale potential difference in two pulses.

7. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in two or more pulses wherein the applied pulses have decreasing time duration as the driving time increases.

8. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in two or more pulses wherein the applied pulses have decreasing amplitude as the driving time increases.

9. (Previously presented) The electrophoretic display panel as claimed in claim 1, wherein the drive means are arranged for application of the grey scale potential difference in more than two pulses, the pulses are separated by at least two non-zero time intervals, and the time intervals increase as the driving time increases.

10. (Canceled)

11. (Previously presented) A method for driving an electrophoretic display device comprising:

an electrophoretic medium comprising charged particles;

a plurality of picture elements, the method comprising acts of:

applying grey scale potential differences for setting a picture element to an optical state from a preceding optical state for at least a subset of all drive waveforms in two or more pulses separated by a non-zero time interval, the grey scale potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each grey scale preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions; and

prior to application of the grey scale potential difference, applying a reset potential difference of each picture element to drive the particles to occupy an extreme position which is

determined based on which extreme position is closest to a position of the particles which corresponds to the optical state.

12. (Canceled)

13. (Previously presented) The method as claimed in claim 11, wherein the act of applying the grey scale potential difference for setting a picture element to an optical state from a preceding optical state is applied in more than two pulses.

14. (Previously presented) The method as claimed in claim 11, wherein the act of applying the grey scale potential difference for setting a picture element to an optical state from a preceding optical state is applied in two pulses.

15. (Currently amended) The method as claimed in claim 11, wherein the time periods between the grey scale pulses increase with increasing drive time.

16. (Previously presented) The method as claimed in claim 11, wherein the pulse length of the grey scale pulse decreases with increasing drive time.

17. (Previously presented) A computer program comprising program code for performing the method as claimed in claim 11 when said program is executed on a computer.

18. (Previously presented) A computer program product comprising program code stored on a computer readable medium for performing the method as claimed in claim 11 when said program is executed on a computer.

19. (Canceled)

20. (Previously presented) Drive means for driving an electrophoretic display panel, said display panel, comprising:

an electrophoretic medium comprising charged particles;

a plurality of picture elements having electrodes associated with each picture element for receiving a potential difference;

drive means arranged for controlling the potential difference of each picture element to be a grey scale potential difference for enabling the particles to occupy the position corresponding to the image information, the grey scale potential difference being a sequence of preset potential differences having preset values and associated preset durations, the preset values in the sequence alternating in sign, each grey scale preset potential difference representing a preset energy sufficient to release particles present in one of said extreme positions from their position but insufficient to enable said particles to reach the other one of the extreme positions, said drive means being further arranged for application of the grey scale potential difference for at least a subset of all drive waveforms for setting a picture element from a preceding optical state to a grey scale in two or more pulses which change the optical state of the system separated by a non-zero time interval and are arranged for prior to application of the grey scale potential difference, driving a reset potential difference of each picture element to drive the particles to occupy an extreme position which is determined based on which extreme position is

closest to a position of the particles which corresponds to the grey scale.

21. (Previously presented) The electrophoretic display panel as claimed in claim 1, comprising a plurality of additional capacitors, at least one additional capacitor being connected to each picture element and to one or more storage capacitor lines.

22. (Previously presented) The drive means as claimed in claim 20, comprising a plurality of additional capacitors, at least one additional capacitor being connected to each picture element and to one or more storage capacitor lines.

APPENDIX B

Evidence on Appeal

None

APPENDIX C

Related Proceedings of Appeal

None